

# DRAFT

August 5, 1996

## CALFED Bay-Delta Program LEVEE AND CHANNEL TECHNICAL TEAM

### Report on Delta Levee Emergency Response Plan

#### INTRODUCTION

This report discusses procedures to provide direction and the highest level of cooperation for successful Delta levees emergency responses including prevention and cost documentation for subsequent claims. This report is also to inform public officials and agencies of the structure and operations procedures relating to flood alert situations including a guide for public officials seeking assistance.

Information related to Delta levee emergency responses has been investigated to determine compatibility with federal and State policy matters as well as the Department's Strategic Business Plan. Identification of funding sources and their potential applicability to Delta levee emergency response has also been reviewed to insure proper use during an emergency. Documentation of field work is also addressed to avoid potential payment disputes.

The complexities of local, State and Federal disaster declaration are described to facilitate communication and accurately provide available assistance. The increased concern about seismic events, has been recognized and the Division of Engineering has been identified as a key resource to assist in such Delta related emergencies.

Environmental and regulatory compliance is an important input of emergency response work, and therefore, this element is also discussed to avoid potential violations.

## POLICY

The policy for Delta levee emergency response is guided by the Department of Water Resources' overall goal of emergency management. This report provides additional specific direction to implement the Department's goals that are outlined in the Department's Strategic Business Plan. The principle goal of emergency management assistance is to fulfill the emergency response functions of the Department established in the "*California State Emergency Plan*" and the "*California Water Code*", including provision of technical and physical assistance to the Federal Emergency Management Agency, the State Office of Emergency Services and other agencies that make federal and State resources available to local agencies. A strategy to meet this goal is the utilization of the "*Standardized Emergency Management System*" and corresponding DWR Incident Command System (Appendix I). An Action Team to facilitate Interdivisional coordination for Department emergency response efforts is also a strategy.

The Department's "*Strategic Business Plan*" (Appendix II) provides general strategies and performance indicators that are applicable to emergency response goals:

### Strategies to Meet This Goal

- Implement Preventive Measures. These measures are designed to comply with SEMS preparedness requirements. SEMS is associated with activities related to personnel readiness, preparation of plans, resource inventorying, setting up department operations centers (DOC) and support systems, training and exercising. Additional Department strategies include protection the Department's personnel, equipment, supplies, facilities and vital public records against the destructive forces of nature and people.
- Respond Immediately to Emergencies. Inspect upstream dams and reservoirs which may affect Delta flooding, Delta levees and federal project levees for

damage due to natural disasters. Continue essential services and direct all other resources, as necessary and appropriate, to accomplish specific objectives described in the "*California State Emergency Plan*."

- Investigate and Report on Disaster Conditions and Provide Technical Assistance for Damage Assessment. Furnish to the Director and others within the Department natural disaster damage data and other information relating to disaster conditions. Provide technical personnel to investigate and report on disaster-caused damages and restoration of damaged facilities.
- Help Develop Hazard Mitigation Plans. Provide information to OES to develop hazard mitigation plans required by FEMA which, when implemented, will reduce future damage to private and public facilities caused by natural disasters.

#### Performance Indicators

- Feedback from FEMA and OES on the timely responses of Department employees to natural disaster assistance requests.
- Monitoring and evaluation of the Department's response to damage assessment of upstream dams which may affect Delta flooding, Delta levees and other federal project levees.
- Monitoring and evaluation of the Department's response assessment and repairs to the State Water Project.

#### BACKGROUND

The Sacramento-San Joaquin Delta is recognized as a unique and valuable resource by both the State and federal governments. Over 60 Delta islands are protected by a network of 1,100 miles of federally and non-federally maintained levees

shown in the Department's 1993 Delta Atlas, page 40. Without levees the Delta could not exist. Proper emergency response activities can be a cost-effective supplement for levee protection, however, it cannot substitute for a proper maintenance and repair program. Local responsibility for maintenance and repair of Delta levees lies with the 55 reclamation districts, the Brannan-Andrus Levee Maintenance District and the Bethel Island Municipal Improvement District. The State of California provides support for this effort by legislatively enacted programs such as the Way Bill of 1973 (SB 541), Delta Levees Act of 1976 (SB 1390) and the Delta Flood Protection Act of 1988 (SB 34/1065). The Department of Water Resources administers SB 34/1065 and is involved with flood fight efforts under Water Code authorities.

To facilitate this flood fight effort, the Division of Flood Management prints a brochure of flood fight methods, flood emergency phone numbers, a *"Directory of Flood Control Officials"*, and a *"Flood Emergency Operations Manual"*. To increase knowledge about seismic events and levee stability, the Department has prepared a Phase I report and implemented a seismic monitoring program (*"Seismic Stability Evaluation of the Sacramento-San Joaquin Delta Levees, Volume I, August 1992"*). Also, the State Office of Emergency Services provides for a *"Standardized Emergency Management System"* that utilizes the Incident Command System. The Department's policy is to operate in compliance with SEMS. SEMS regulations require that SEMS be used when the local government emergency operations center is activated or when a local emergency is declared or proclaimed. The EOC is usually activated when a local emergency is declared or proclaimed. However, there may be situations such as an agricultural emergency or drought emergency that necessitates a local emergency declaration or proclamation, but does not require EOC activation. The requirement to use SEMS includes:

fulfilling the management and coordination role of local government, and providing for the five essential SEMS functions of management, operations, planning/intelligence, logistics, and finance/administration.

The emergency operations center is the location from which centralized management of the local government emergency response is performed. The use of EOCs is a standard practice in emergency management. All local governments are to have a designated EOC, or department operations center, under the SEMS process. The physical size, staffing, and equipping of DOCs depend on the size and complexity of the local government and the emergency operations it can expect to manage. The level of EOC staffing will also vary with the specific emergency situation.

DOCs should provide for the five primary SEMS functions of management, operation, planning/intelligence, logistics, and finance/administration. In a small department, the five functions may be performed by a single person or very few people. A very large department may have a highly structured DOC organization with sections, branches, and units.

DOCs should coordinate with the EOC when activated. Departments should have appropriate representation at the EOC as determined by local procedures. DOCs may be the link to the field response level.

The federal government assists in emergency responses under certain conditions. A memorandum of understanding was signed in 1984 between the U.S. Army Corps of Engineers and State of California for cooperative action during flood emergencies (Appendix III). Also, in the past, FEMA has provided disaster assistance to local districts maintaining nonproject levees. Future eligibility for federal assistance is discussed in a February 8, 1996 memorandum prepared by Region IX of FEMA on the subject of *"Clarification of FEMA Policy - Levees, Dikes, and Other Similar Flood Control Work."*

The Sacramento-San Joaquin Delta is an area of farmland and communities with the boundary defined by the Water Code. It includes approximately 740,000 acres and

is bound approximately by Sacramento, Stockton, Tracy and Antioch. There are 700 miles of interlaced channels that convey floodwaters from the entire Central Valley to the ocean. The Delta provides habitat for wildlife and fish, accommodates shipping, provides local water supply, protects infrastructure and conveys water to 20 million Californians. Most of the land is below sea level and therefore emergency response actions are unusually important requiring prompt response and action to offset the costly consequences associated with a levee failure. A levee failure can inundate thousands of acres of farmland up to 20 feet in depth requiring a costly process to reclaim the island. Also, such an event can cause significant salinity intrusion degrading Delta habitat and halting the operations of major State water delivery systems.

Subsidence has occurred on the majority of Delta islands and has created a situation where land protected by levees is up to 25 feet below sea level. Due to subsidence, levee conditions in the Delta are quite different from those in many other locations since Delta levees experience constant water pressures. In other areas, water forces act on the levees only during periods of high water or flooding. This difference between many Delta levees and levees in other areas has important implications regarding levee design and construction and emergency response. Delta levees must remain fully functional during any improvement or rehabilitation as they are subjected to continuous water pressures. The Department has undertaken a study in cooperation with the U. S. Geological Survey to develop a program to understand subsidence and develop methods to reduce future occurrence. This is consistent with the Department's policy on preventive action.

Delta levees can experience various types of flood events. Levee failures can occur from instability, overtopping and seepage. In the northern Delta, channel capacities are limited and overtopping can occur. In the western part of the Delta, land elevations are the lowest and water pressures acting on the levees are the greatest. In addition, there are concerns about levee performance during a seismic event. Instrumentation has been installed to measure ground accelerations to gain more

knowledge of potential impacts that surrounding faults may pose.

Since original reclamation, each of the 70 islands or tracts has flooded at least once. Since 1980, flooding has required nearly \$100 million in disaster assistance funding. Recent experiences in assisting local jurisdictions to stabilize threatened levees on Delta islands have included DWR staff of the Divisions of Flood Management, Planning, Engineering, Operations and Maintenance, and others, which have been successful and provided information to define procedures to manage future events. The success is documented by recent Delta Flood Protection Act activities and flood fight activities that have identified problems and prevented probably flooding on various occasions. With improved funding for preventive actions, disaster assistance claims have been substantially reduced. However, continued improvement in flood fight procedures are needed to efficiently use available funds. Current SB 34 funding is scheduled to end in 1999, and remaining funding is inadequate to resolve Delta issues.

Actions to improve flood fight efforts are consistent with the Cal Fed process. The primary program objective for addressing Bay-Delta system vulnerability as a core Cal Fed action is to reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees. The vulnerability of the levee system to both general failure and sudden catastrophic failure can be reduced by implementing an integrated and comprehensive program for Delta levees and channels. This plan would need to streamline and consolidate the planning, regulatory, and permitting processes which affect the system, and provide a reliable funding source for system maintenance and rehabilitation.

Reacting to Delta flood events is a complex process. Prevention is the most cost-effective approach, however, flood alert conditions will always exist. Directing response activities requires preparedness, consideration of State, federal, and local expertise, monitoring information, warning communications, classification of threat, and responsibility for action. It also requires well defined responsibilities and other proper

documentation procedures to avoid funding disputes.

## PREVENTION

A recognized aspect of emergency response is preventive measures. An emergency response plan is a short-term measure and it should not be used as a substitute for preventive measures. These should be monitored regularly and decisions made that will minimize high-cost flooding and dangerous emergency actions. Important preventive measures are included in the planning for a long-term solution that is a core action of the CALFED process. The Department's advancement of the SB 34 Program has significantly improved knowledge of levee design and the recognition of threatened conditions. In addition, this program has implemented subsidence evaluation programs that provide information for subsidence control programs. Other advancements by the Department include: (1) a seismic investigation; (2) an increase in local beneficiaries contribution to Reclamation Districts to improve levees; and (3) federal participation in beneficial reuse programs that improves levees with clean dredged material.

The Corps has initiated numerous Delta programs that are compatible with short- and long-term State efforts. The Delta Protection Commission has defined policy that helps focus State efforts on levee maintenance and improvement needs. FEMA has established definitions for minimum hazard mitigation criteria to continue future disaster assistance funding. Reclamation districts continue to fund improvements and improve criteria for such matters as encroachment remediation. These actions will act to prevent Delta floods.

Other preventive measures include publication of flood fighting methods, staff training, and advancement of hazard mitigation standards. In 1984, to increase readiness, an MOU between the Corps and the State for cooperative action during flood emergencies was signed. This provided negotiated detailed plans for actions during flood emergencies, education, and training activities.



This 1984 MOU directs the State to: negotiate detailed plans with the Sacramento, Los Angeles, and San Francisco District Engineers of the Corps of Engineers for cooperative and coordinated operations in the California area of their respective districts during flood emergencies as may be accomplished within the purviews of the memorandum; request federal assistance promptly in instances when local or State resources are insufficient to cope with the situation. The Corps also has authorization for disaster preparedness including providing technical assistance and participating in natural disaster seminars. Snag removal and channel obstruction work done by the Corps is also a preventive measure.

## RESPONSIBILITIES

The Governor has designated Director Kennedy of the Department as an official liaison officer between the State and the Corps. The division engineer, South Pacific Division, is the designated Corps representative. Within the Department of Water Resources are: Divisions of Flood Management, Local Assistance, Operations and Maintenance, Planning, and Engineering, all of which have emergency responsibilities for the Delta. Central District has a primary responsibility in representing the Division of Local Assistance. The lead responsibility is with the Division of Flood Management. Nothing in this report should be interpreted as a change to the Water Code or the Department's strategic business plan. The basic missions of these agencies are listed below. Other responsibilities and authorities can be found on the internet at: <http://www.ca.gov/gov/official.html#agencies>

**Division of Flood Management.** The mission of DFM is to prevent loss of life and reduce property damage caused by floods, and to assist in recovery following any natural disaster. DFM monitors maintenance of the levees on behalf of The Reclamation Board, and responds to levee-endangering situations, and channels emergency funds. DFM is active in Delta levee emergency response activities.

During periods of flood alert conditions, DFM is authorized to perform the following duties:

- Ensure the integrity of all federal and State constructed levee systems within the Central Valley.
- Maintain and operate units or portions of the Sacramento River Flood Control Project that are named in Section 8361 of the "*California Water Code*" (Appendix IV).
- Maintain and operate units or portions of flood control projects in the Sacramento or San Joaquin Valleys which are within the maintenance areas supervised by the Department. Sections 12878.1 of the "*California Water Code*" defines this authority (Appendix V).
- Provide and staff a State-Federal Flood Operations Center to serve as a focal point for gathering and disseminating current flood information.
- Evaluate flood conditions throughout the State and provide the Director of the Department with the information needed to declare a flood mobilization.
- Prepare and disseminate flood forecasts.
- Brief and update media and public
- Assist local agencies in preventing the spread of flood waters.
- Coordinate local, State and Federal efforts in flood fight activities.

- Develop, implement and coordinate SEMS requirements including management, operations, planning/intelligence, logistics, finance administration, and Department's Operations Center (DOC) or Flood Operations Center, which coordinates with the State Emergency Operations Center when activated.

To carry out these responsibilities, the Department maintains a permanent professional staff, highly skilled in flood control and forecasting activities. During flood alert periods, the staff is temporarily expanded. The DFM utilizes an Incident Command System consistent with the SEMS process. Update of ICS methodology and reporting forms will be addressed by DFM.

Levee maintenance monitoring is done through annual inspections and "joint inspections," which are field conferences with the local district superintendents to help districts meet proper levee maintenance criteria including levee access for emergency flood fighting. The inspections document maintenance practices.

Emergency response during a flood alert is directed by DFM's Flood Fight Specialist. In person or through an inspector, DFM investigates all reports of levee distress, dealing directly with the island superintendent or other representatives, and determines what needs to be done to best avert a levee failure. If the situation is an immediate threat to the levee, DFM has the lead responsibility to define and initiate immediate action necessary to mobilize the required resources.

In a mobilization declared by the Director of the DWR, DFM can use any of the Department's personnel, equipment, or other resources to fight the flood in accordance with the ICS process. Normally, the human resources consist of DFM's own Flood Project Inspection Section to watch endangered areas, plus personnel from the District of the Division of Local Assistance to monitor high water. DFM can also obtain flood fight crews through the Office of Emergency Services using the Standardized Emergency Management System. The crews come from the California Conservation Corps and

through the Department of Forestry and Fire Protection, which provides inmate crews from the Department of Corrections. A Governor-declared emergency enables the use of emergency funds.

The Corps has the authority, under PL 84-99, to repair flood control projects which are damaged by flood. Corps assistance is defined by the *"U. S. Army Corps of Engineers Disaster Assistance Overview"* (Appendix VI) and a Memorandum of Understanding signed in 1984 between the U.S. Army Corps of Engineers and State of California for cooperative action during flood emergencies (Appendix III).

Emergency response funds are managed by OES to support staff. DWR staff can: (1) offer technical advice to local maintaining agencies in meeting their responsibilities for first response to levee-endangering incidents; (2) direct local maintaining agencies to their OES operational area for mutual aid assistance; (3) for certain levees prequalified by the Corps of Engineers, determine whether local maintaining agency resources can meet the emergency response need, and if not, prepare a request for Corps of Engineers emergency response under Public Law 84-99; (4) for the same prequalified levees, advise the local maintaining agency as needed in applying for Corps of Engineers rehabilitation support.

**Division of Local Assistance.** The Central District is the responsible to provide a lead role for Delta levee actions within the Division of Local Assistance. The District is preparing funding and emergency guidelines for SB 34 funds for Special Projects. It administers the SB 34 program, which includes Delta Levees Maintenance Subventions and Special Flood Control Projects. Current criteria for threatened levees exist under the Special Flood Control Projects program. The Delta Levee Subventions program is a preventive action, improving maintenance and rehabilitation of the local levees. Special priorities have been established to optimize the effectiveness of expenditures. On behalf of the Reclamation Board, Central District reviews and evaluates applications for funding and establishes priorities for fund allocation. The

DFM inspections of local levees in the Delta are financed throughout the program, and the DFM inspectors work closely with Central District staff on this activity.

The Special Flood Control Projects program covers eight specified Western Delta islands including Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell, and Webb Islands, and the towns of Thornton and Walnut Grove. The program concentrates on threatened levee rehabilitation, encroachment reduction, dredged material reuse, long-term levee improvements, and habitat protection. The program also includes the study to reduce subsidence in the Delta.

Both programs were established by the Delta Flood Protection Act of 1988 (SB 34). The stated intent of the Legislature under SB 34 was to appropriate \$6 million per year for each of the Special Flood Control Projects and the Delta Levees Subventions Programs. Recent legislation has altered the funding mechanics.

**Division of Operations and Maintenance.** The State Water Project is the responsibility of the Division of Operations and Maintenance. Because the export point for the SWP is in the Delta, water quality there is a critical concern for O&M. Depending on the size of the island and time of year, a Delta levee failure can affect export water quality. O&M is supported by SWP funds, which originate with the water contractors. The Division is obligated to take every reasonable and necessary action to protect the water supply including halting exports during a flood event to protect water quality.

**Division of Planning.** The Division of Planning has conducted advanced mathematical flood modeling that has defined peak water elevations and channel capacities in the northern Delta. This information has been coordinated with the Corps and local participants in the Federal National Flood Insurance Program. Study results provide valuable information on preventive measures. In addition, this Division provides oversight in connection with installation of barriers in the south Delta that must be removed under high flow conditions.

**Division of Engineering.** The Department's experts in embankment stability and geotechnics are located in the Civil Design Branch of the Division of Engineering. They provide expertise in the evaluation of levees and design of repairs. The Civil Design Branch maintains contact with outside consultants in order to access the most recent information available from the universities and private sources. It has an extensive library of reference materials and a large collection of computer software for analysis and design. In addition, it maintains a soils laboratory and has a designated Geotechnical Specialist on its staff. DOE staff has taken the lead role in advancing knowledge about seismic events and levee responses, has installed devices to monitor seismic events in the Delta and has updated Bulletin 192-82 standards.

**Environmental Services Office.** The Environmental Services Office will provide support in evaluating environmental and regulation compliance requirements. This will be coordinated with DWR Legal. A preliminary environmental checklist is shown in Appendix VII.

### EMERGENCY RESPONSE ELEMENTS

General emergency response elements include: decision making/approval, monitoring, activation of flood alert, flood mobilization and utilization of the Incident Command System, and documentation. The relationship of these elements is shown in Appendix VIII.

### PROCEDURES

The emergency response procedures include several basic functions for pre-disaster activities. These functions include:

- Implementation of the 1984 DWR/Corps Memorandum of Understanding

including negotiating plans, disseminating information and coordination. Implementation of SEMS, *"California State Emergency Plan,"* the Department's Strategic Management Plan, and the *"Sacramento-San Joaquin Delta Emergency Water Plan, Report to the Legislature, December 1986"* (Appendix IX) are also included.

- Preparation of a list of agency names and 24-hour numbers for contact. The current flood emergency contact list and the *"Directory of Flood Control Officials"* meets this requirement. Also a list has been prepared by Central District which is included in Appendix X.
- Preparation of Delta flood forecast data transmittal process for both summer and winter factors. These factors need to be regularly available at a single location. Information about this data is to be known to all agencies and responsible personnel that may be involved in an emergency response.
- Determining the criteria or judgement to be used in an alert status. This determination is a responsibility of the Chief of Division of Flood Management and involves monitoring and notification of field conditions to determine mobilization requirements.
- Methods and sequences of communicating alert status to responsible participants connected to a Delta levee flood response. The list includes officials, water projects, operators, and those responsible for infrastructure.
- Determination of the alert status level. The initial determination is the responsibility of the Chief of Division of Flood Management. Only the Governor can declare a state of emergency. The Corps actions under PL 84-99 are when a category of imminent threat of unusual flooding exists.
- Determination of environmental and regulatory permit requirements.

- Determining responsibilities for funding and management of flood fight activities. This is related to local, gubernatorial or Presidential disaster declarations. General funds and SB 34 funds are also available for use.
- Overseeing of construction documentation and inspection of flood fight activities.

For post-disaster activities there are three additional functions. The first is coordination of information for evacuation. The second is review of a potential disaster declaration with the OES. The third involves actions associated with changes of project operations for the SWP, Central Valley Project, Contra Costa Water District, East Bay Municipal Utility District. In addition, special arrangements will involve contact with other agencies and utilities such as the Federal Highway Administration, the Corps of Engineers, Caltrans, Pacific Gas and Electric Company, Union Pacific Railroad, Southern Pacific Transportation Company, Santa Fe Railroad, and the counties of San Joaquin, Alameda, Contra Costa, Solano, Yolo, and Sacramento. The *"Standardized Emergency Management System"* procedures will be followed.

The procedures contained in this report are intended to enable DWR to maintain a consistent methodology by providing a "representing division" for Department actions and reporting; to recognize Division responsibilities and utilize the expertise of each Division; to optimize the effectiveness of each Division's staff; to assure that each Division has complete information; and to work from a predetermined definition of "emergency" so that responses to funding requests from the local agencies and other Department actions may be consistent. Throughout the process, each Division must acknowledge that the underlying responsibility for Delta levee maintenance and repairs lies with the local districts.

The following procedures will be followed in internal management of levee-endangering events in the Delta:



1. DFM, DLA, O&M, DOP and DOE shall each nominate a representative to serve on an Interdivisional Action Team for Delta Levees, which shall evaluate the seriousness of Delta problems as they occur and prioritize the Department's emergency response efforts. Nominations for committee members shall be submitted to the Director for approval. This committee should meet occasionally (perhaps three times a year) to coordinate each Division's activities, and must always be ready to respond immediately to reports of Delta trouble. This team will review and interpret the applicability of OES, FEMA, and Corps emergency response authorities and responsibilities for Delta levees. The Action Team will assess the December 1986 AB 955 report, *"Actions and Services Available to Restore Services."* Also, this team will recommend criteria for the use of SB 34 funds for a Delta emergency.

An objective will be to increase Department preparedness including: (1) Review Department's state of preparedness with respect to the *"California Emergency Response Plan"*, the Department's Strategic Management Plan, and the *"Sacramento-San Joaquin Delta Emergency Water Plan"*, and *"Report to the Legislature, December 1986"* and *"Seismic Stability Evaluation of the Sacramento-San Joaquin Delta Levees, Volume 1, August 1992"*; (2) Establish procedures consistent with the *"California Emergency Resources Management Plan"* and methods for field determination of the potential threat to be transmitted to the Chief of DFM and the Action Team. Also, relevant monitoring data and other site assessments will be determined.

The Action Team will recommend whether the event is non-threatening, or a situation of likely threat, needs attention or imminent failure. Classification of an event shall comply with SEMS classifications of incident, emergency, and disaster. In all cases, the Chief of DFM will have the authority to independently classify the situation if he judges that it is warranted. The Action Team shall meet

regularly and in a fashion consistent with the 1984 MOU. This team shall act as an advisory panel for the DFM representing the Department and as an information clearinghouse. The Chief of DFM directs all units of the Flood Operations Center and manages the Incident Command System consistent with the SEMS. He must remain fully current on any flood situation so that he can advise the Deputy Director. He recommends the declaration of a flood alert and activates the Flood Operations Center as conditions require. He is subject to call 24 hours a day.

2. All levee problems shall be directed to the Flood Operations Center. Independent of the classification of the threat, DFM will provide an update report to the Delta reclamation districts identified in the most current *"Directory of Flood Control Officials."* To expedite the process, e-mail addresses will be listed and utilized. DFM's State-Federal Flood Operations Center shall act as the initial receiving point for all reports of Delta levee problems. The Flood Center shall maintain 24-hour communication through an answering service and personnel on call at home. The Flood Center shall also coordinate with the State Emergency Operations Center in the state of emergency. The Flood Fight Specialist or an inspector shall be readily available to the Flood Center and shall have a vehicle to make an investigation at any time. The Central District Chief, when notified of an alert status shall give a priority to DFM for vehicle and staff field assignments. The Chief of the Division of Operations and Maintenance when alerted of emergency status shall prepare to make a determination on Delta SWP pumping operations. Other Divisions receiving reports of Delta levee problems shall notify the Flood Center immediately. Other project operators including the CVP, EBMUD, and CCWD shall promptly be notified of the potential to take emergency action.

DFM will be responsible for providing hydrologic analysis and for acquisition of flood fight materials such as sandbags, plastic sheeting, lumber, stone, pumps, etc.

3. DFM shall be responsible for initiating communications on this investigation. DFM shall be responsible for assuring that the initial site investigation has been conducted. Proper communications to the Corps, FEMA, and QES shall be directed by DFM personnel. Immediate reports will be made to the Director on serious conditions. Based on communications with responsible entities, DFM shall make a recommendation on the responsibility for action and funding. Any conflicts will be reported to the Director along with a recommended course of action including responsibility for action. Responsibility for action will require special consideration of seismic events or levee activity specific to SB 34/1065.

Special lead assignments shall be identified for activities connected to areas of special consideration. These include DOE Chief of Civil Design and the Chief of the Central District Flood Protection and Geographical Information Branch. DFM shall then notify other involved Divisions and the Interdivisional Action Team on Delta Levees. DFM shall regularly update flood fighting methods and emergency phone numbers and Directory of Flood control Officials. Communications with the Corps shall recognize the 1984 memorandum of understanding between the Corps and the State of California for cooperative action during flood emergencies. Also, Corps communications will recognize PL 84-99 criteria as contained in the *"U. S. Army Corps of Engineers Disaster Assistance Overview"* found in Appendix VI.

The Chief of Flood Operations or his deputy notifies:

Department of Water Resources

Director and Deputy Directors

Chief, Division of Flood Management and Branch Chiefs

Hydrology Branch and Forecasting Section

Project Maintenance Branch and Maintenance Yards

Sections of Flood Operations Branch

Flood Management Administrative Support and Services Office  
Division of Local Assistance and District Representatives  
Chief, Office Of Water Education  
Public Information Office  
Communications Coordinator  
Flood Control Development Branch  
Division of Safety of Dams  
Mobile Equipment Branch

Office of Emergency Services

Coordinating State and Federal Agencies

California-Nevada River Forecast Center  
Department of Forestry and Fire Protection  
California Conservation Corps  
Caltrans  
California Highway Patrol  
California National Guard  
National Weather Service  
U.S. Bureau of Reclamation  
U.S. Army Corps of Engineers  
U.S. Army (through the Corps of Engineers)  
Federal Emergency Management Agency  
General Accounting Office  
U.S. Geological Survey  
Federal Highway Administration

Coordinating Counties and Sheriff's Offices

San Joaquin

Alameda  
Contra Costa  
Solano  
Yolo  
Sacramento

#### Utilities

Contra Costa Water Agency  
East Bay Municipal Utility District  
Pacific Gas and Electric Company  
Union Pacific Railroad  
Southern Pacific Transportation Company  
Sante Fe Railroad  
Western Area Power Administration

4. Central District will represent the Department for non-threatened conditions on non-project levees. During emergencies, coordination will be maintained to continue with DFM lead role responsibilities. The DWR District Coordinator, under the direction of the Chief of Flood Operations, acts as liaison between the Flood Operations Center and flood fight personnel. District will supplement field and Center personnel, and provide high water staking during, and prior to, flood emergencies.

The District Coordinator will arrange for equipment (radio, cars, cameras, etc.), supplies and travel money for District personnel. In addition, the coordinator informs the Chief of Flood Operations concerning flood related District activities.

The Central District Chief of the Flood Protection and Geographic Information System Branch will report to DFM and contact appropriate local agencies.

Funding sources will be considered under SB 34/1065, however the applicability of PL 84-99 funds will be investigated. The Reclamation Board participates with the Corps under PL 84-99 to restore and/or repair flood-damaged works after a flood. Under this program, the Board provides the Corps with the necessary rights of way and relocations. In addition to repair and restoration, the work may also include strengthening or other modifications of the levee.

Emergency work done in connection with SB 34/1065 funds will be contracted out by the reclamation districts if needed. This will be done in accordance with *"Public Contract Code"* Chapter 1, Article 60.5, Section 20920-20937. Central District will develop a funding source proposal for such use of SB 34/1065 funds to be considered in the future. Both DFM and the local districts stock flood fighting supplies and are trained in their use. Central District shall keep the Action Team notified until the problem is resolved. The Corps disaster assistance overview shall be referenced in determining the applicability of PL 84-99 funds. This overview is contained in *"U. S. Army Corps of Engineers Disaster Assistance Overview"* found in Appendix VI.

Central District is responsible for inspecting levees during flood periods. Activities of this Section are coordinated with those of the Department's. Personnel from this section are dispatched from the Flood Operations Center to ascertain the condition of the Sacramento and San Joaquin River Delta, to investigate flood damage threats, to inspect major trouble areas, and to evaluate the entire flood situation. They also investigate requests from local agencies for State assistance and send their recommendations to the Chief of Flood Operations.

5. In situations of likely threats, responsibility for action will be determined by DFM in consultation with the Action Team. This condition will have a higher focus on field analysis, observation, and reporting than an imminent failure condition. DFM will

review funding sources from SB-34 and General Fund emergency accounts. Local agency funds will also be considered. DFM will keep records on decisions concerning funding. DOE will provide the lead technical analysis on conditions that are related to a seismic event. DFM will consult with the Action Team to document the reasoning for levee emergency classifications. DFM will keep the Director and Chief Deputy Director apprised of emergency classifications.

6. DFM will represent the Department in situations requiring prompt repairs on federal levees in the Delta and elsewhere. DFM will contact the Corps of Engineers concerning the actual repairs.
7. Emergencies for purposes of SB 34 are those which may be defined for local levees under rules developed by the administrators of the SB 34 program. DLA shall take immediate steps to define such emergencies and their application to the SB 34 program.
8. In SB 34 emergencies, which are not threatened immediate failure, DLA will represent the Department.
9. Under an imminent threat of unusual flooding, DFM will consider a written request from the State Governor for Corps assistance in addition to State emergency work. The classification of threat will be established in cooperation with the National Weather Service and Corps, and levees which have already failed will be recommended by DFM through the Director as candidates for a declaration of emergency by the Governor. A written request from the Governor to the appropriate district commander will be provided concurrently with or immediately after the Governor's request to FEMA for a Preliminary Damage Assessment.
10. DFM will represent the Department for threatened immediate failures and actual failures, regardless of previous assignment to DLA. DFM's contacts with the Corps

of Engineers, the Office of Emergency Services, the California Conservation Corps, and the Department of Forestry and Fire Protection, and its ability to mobilize any Department personnel, are critical assets in response to the situation. Under these conditions, activities are elevated to include notification of contractors, determination of corrective needs, and identification and initiation of an action plan. This includes consideration of engineering, stand-by equipment and materials, bidding, and environmental documentation.

If conditions intensify and flooding continues to be imminent, an emergency condition may then be declared by the Director of DWR. The Director designates the location, nature, cause, and extent of the emergency. The declaration is sent to the Governor for his concurrence, with a request that funds be made available to the Department to meet the emergency. Department financial assistance procedures will be consistent with guidelines set forth in the SEMS process.

11. Under pre- and post-disaster conditions, DFM will establish documentation for construction, inspection, and reimbursement procedures. DFM will assign management of emergency work in writing to DLA or DOE if needed. Emergency work will consider necessary permits and environmental documentation. Relevant procedures from the *"Public Contract Code"* Chapter 1, Article 60.5, Section 20920-20927 will be applied. DFM will explore State financial assistance including: (1) local declaration of emergency, (2) Governor's proclamation of State of emergency, and (3) President's declaration of major disaster or emergency.

In the event of an emergency, the on-site inspector will follow the emergency disaster management procedures found in the Standardized Emergency Management System process. On-site information noted by inspector shall include:

- Note the location, date, weather conditions and time of the inspection.
- Describe the condition of the levee relating extent of damage



- Request “as-built” information from reclamation district officials
- Record in as much detail as possible any facilities or infrastructure that has been damaged.
- Note if there are any injuries.
- If there is a contractor on site and working make notes of any activity going on such as:
  - Who is directing the work?
  - What work is being performed?
  - What equipment is being used (manufacturer, model and numbers if possible)?
  - How many people are working?
- If dredging and/or barge mounted cranes are on site:
  - Record name of dredge and barge numbers and crew size.
  - What kind of material is being handled?
  - What size bucket and swings per minute?
- If trucks are being used to haul materials:
  - Note the material being hauled (rock, sand, earth, road base, concrete) and where it is being placed.
  - Are load tags being collected?
  - Is levee material being loosely dumped or compacted?
- If District officials or the District Engineers are available:
  - Have appropriate bidding procedures been followed?
  - Request copies of any invoices from the contractor(s).
  - Request pre-incident surveys and photos.
- Take current photographs for details in a written report.
- If needed, contact other agencies such as OES, FEMA, Corps, DFG, Red Cross, the appropriate county, fire and police.

The following items should be readily available in the event of an emergency:

- Appropriate manuals
- Rain gear
- Diary or bound notebook or tablets
- Pens, pencils, felt-tip, highlighter, erasers, straight edge, stapler, tape
- Business cards
- Flashlight, camera and film, pocket knife,
- Quad-ruled graph paper
- Emergency phone numbers, inspectors manuals, forms
- Cellular telephone
- Laptop computer

12. Communications concerning the disaster will follow the planning/intelligence requirements of the Standardized Emergency Management System (SEMS).
13. The Office of Water Education will speak to the public for the Department to outside agencies and persons, except as provided below. Within the Department, the following procedures will be followed during a flood alert or emergency flood condition to the extent that they are applicable and appropriate.

A departmental memorandum is issued declaring the Department to be under flood alert conditions. Additional Departments are alerted to flood conditions. Additional personnel from the Division of Flood Management who have been assigned to temporary duty in the Flood Operations Center are notified when to report.

14. DOE shall be responsible for review and co-approval, with the representing Division of all plans for construction, shall provide soils laboratory services as needed, and shall conduct a general review of the construction noting the degree of its conformance to the plans. DOE will provide copies of all reports, test logs, and other items related to the event for requesting Divisions. In the event that it is determined

the local reclamation districts shall provide engineering services, then DOE will assist in an advisory capacity.

DOE shall have the lead role for the review, development, and inspection of earthquake criteria utilizing the Richter magnitude scale, and distance from the epicenter. Following earthquake inspection criteria for seismic emergency response will be as follows:

1. If an earthquake is felt in the immediate area.
2. If an earthquake is reported with a Richter magnitude (M) greater than 3.7 and a facility is within a radial distance from the epicenter as determined by the equations:

(a) Kilometers = 57.94 (M = 3.7222)

(b) Miles = 36 (M=3.7222)

Using the miles equation (b) noted above, the following magnitudes and distances from the epicenter are given for comparison:

Richter magnitude greater than 4 within 10.0 miles of facility

Richter magnitude greater than 5 within 46.0 miles of facility

Richter magnitude greater than 6 within 82.0 miles of facility

Richter magnitude greater than 7 within 118.0 miles of facility

DOE will provide DFM with an inspection report. If any threatened conditions are found, the described DFM emergency response activities will govern.

15. DFM will be responsible for keeping a record of the event, for reference and comparison in future events.

16. Local governments must comply with SEMS regulations in order to be eligible for Department funding as required by SEMS.

## References

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"Inspectors Estimating Guide," Federal Disaster Assistance Program, July 1981.

# Appendix Items

- I. "Incident Command System, October 1, 1989"
- II. "Strategic Business Plan, May 1994"
- III. "1984 Between the U.S. Army Corps of Engineers and State of California"
- IV. Section 8361 of the "California Water Code"
- V. Section 12878.1 of the "California Water Code"
- VI. "U. S. Army Corps of Engineers Disaster Assistance Overview"
- VII. Environmental Checklist
- VIII. Flowcharts
- IX. "Sacramento-San Joaquin Delta Emergency Water Plan, Report to the Legislature, December 1986"
- X. Flood Emergency Phone Numbers
- XI. Definitions
- XII. Diagram of Local Actions Following a Disaster, "Disaster Assistance Procedure Manual," OES, 1985.
- XIII. Disaster/Emergency Event Flow Chart, "Post Disaster Hazard Mitigation Planning Guidance for State and Local Governments," FEMA, September 1990.
- XIV. Seismic Instrumentation in Sacramento-San Joaquin Delta
- XV. State Financial Assistance
- XVI. "Flood Emergency Operations Manual," Draft, November 1995